UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
5 POST OFFICE SQUARE SUITE 100
BOSTON, MASSACHUSETTS 02109-3912

June 5, 2015

Patricia W. Aho, Commissioner
Maine Department of Environmental Protection
17 State House Station
Augusta, ME 04333-0017

Re: Review of and Decisions on Maine Water Quality Standards

Dear Commissioner Aho:

On February 2 and March 16, 2015, EPA issued decisions approving or disapproving Maine's new and revised water quality standards ("WQS") adopted between 2003 and 2014 (as well as certain WQS that were adopted prior to 2003) as they relate to waters in Indian lands in Maine. In the February 2 decision, EPA explained that EPA had never approved (or disapproved) any WQS for waters in Indian lands in Maine until that date, and stated its intent to review and approve or disapprove all remaining Maine WQS that could apply to waters in Indian lands as soon as possible. This letter contains EPA's decisions on those remaining WQS that EPA has not yet acted on as applied to waters in Indian lands.[1] In addition, as explained below, this letter includes some decisions regarding new or revised WQS provisions that EPA had never before approved or disapproved for any waters in Maine, and these decisions apply to all waters of the State.

In order to determine what WQS still needed to be reviewed and approved or disapproved for waters in Indian lands, EPA reviewed the statutes and rules submitted by Maine Department of Environmental Protection ("DEP") on May 23, 2000 (which updated Maine's initial submittal of June 21, 1999) to EPA's water quality standards repository for Maine,[2] and also searched its files for any WQS submitted between May, 2000 and December, 2003. EPA reviewed all of the provisions in those statutes and rules and identified those WQS that EPA had not yet approved or disapproved in the decisions referenced above.[3] EPA's decisions on these remaining WQS are set forth below and discussed in the paragraphs that follow.

---

[1] Because EPA has never acted on pre-2003 WQS for waters in Indian lands, they remain "new or revised" WQS as to those waters and thus subject to EPA review and approval or disapproval pursuant to CWA § 303(c).
[2] http://water.epa.gov/scitech/swguidance/standards/wqslibrary/me_index.cfm.
[3] Of those submissions, the only new or revised WQS that EPA did not review is DEP Rule Chapter 530.5, which was repealed in 2005.

EPA learned during review of its historic files that the Agency had never formally approved or disapproved some of the State's new or revised WQS for any waters in Maine (or could find no record of ever having done so), most of which Maine submitted before May 30, 2000,[4] but one of which Maine submitted in 2001. For those WQS, EPA's decisions today apply to waters both inside and outside Indian lands, and we have identified such WQS decisions below.[5, 6] EPA today is disapproving on a statewide basis several new or revised WQS that were adopted and submitted before May 30, 2000. Pursuant to 40 C.F.R. § 131.21(c), those WQS took immediate effect in waters outside Indian lands for Clean Water Act purposes upon submission to EPA, and following EPA's disapproval they will remain in effect in waters outside Indian lands until the State promulgates (and EPA approves), or EPA promulgates, replacement WQS.

Lastly, EPA identified a number of provisions that EPA is not taking action on because we have concluded that they are not WQS requiring EPA review and approval; these are identified at the end of this letter.

EPA has attempted to be as thorough as possible, but if we inadvertently overlooked a WQS that would apply to waters in Indian lands, we would appreciate DEP's bringing that to our attention as soon as possible so that we can take action on any such WQS.

Approvals

Pursuant to Section 303(c)(3) of the CWA and 40 C.F.R. part 131, I hereby approve the following new and revised water quality standards for all waters throughout Maine, including in Indian lands:

- 38 M.R.S. § 361-A – Definitions: Discharge, Agricultural activities, Commissioner, Board, Department, Pollutant, and Waters of the state;

- 38 M.R.S. § 413(11.D) – Antidegradation provision for mercury discharges;

- 38 M.R.S. § 414-A(1.A, 1.B, and 1.C) –Tier 1 and 2 antidegradation provisions; and § 414-A(2) – language that authorizes the use of compliance schedules in discharge licenses to meet final effluent limitations based on a water quality standard adopted after July 1, 1977;

- 38 M.R.S. § 464(2-A) – Requirements and limitations for the removal of designated uses and creation of subcategories of uses;

---

[4] For some new or revised WQS in Maine, it is not clear from EPA's records whether the State submitted them to EPA for review at the time of enactment. However, EPA considers any WQS included as part of Maine's May 23, 2000 submission to the WQS repository to have been submitted to EPA before May 30, 2000 for the purposes of 40 C.F.R. § 131.21(c).

[5] In the event it comes to light that EPA did previously approve any such standards in state waters, then the date of that earlier action would be the operative approval date.

[6] EPA is not specifically identifying ministerial or nonsubstantive revisions (e.g., changing "department" from "commissioner," or changing "is" from "shall be") to previously approved WQS but is hereby approving them as applicable to all waters.

- 38 M.R.S. § 464(2-B) – Temporary removal of uses, use attainability analysis, and creation of subcategories of uses for combined sewer overflows;

- 38 M.R.S. § 464(4.D) – Policy for determining the assimilative capacity of a river or stream (second and third sentences);

- 38 M.R.S. § 464(4.H) – Habitat and aquatic life criteria for new (post-1992) hydropower projects;

- 38 M.R.S. § 464(9-A.D and 9-A.E) – Habitat and aquatic life criteria for existing hydropower impoundments managed as great ponds;

- 38 M.R.S. § 464(10) – Habitat and aquatic life criteria for existing hydropower impoundments managed under riverine classifications;

- 38 M.R.S. § 465(1.C.(3) and (5)) –Certain exceptions to prohibition on discharges to Class AA waters;

- 38 M.R.S. § 465(4.B., the last two sentences) – Direction to adopt rules for identification of fish spawning areas; and

- 38 M.R.S. § 465-B(1.C.(3) and (4)) –Certain exceptions to prohibition on discharges to Class SA waters.

Pursuant to Section 303(c)(3) of the CWA and 40 C.F.R. part 131, I hereby approve the following new and revised water quality standards for specific waters outside of waters in Indian lands:

- 38 M.R.S. § 464(9-A.A) – Habitat and aquatic life criteria for existing hydropower impoundment above the Ripogenus dam; and

- 38 M.R.S. § 464(11) – Habitat and aquatic life criteria for four river segments downstream of existing hydropower impoundments.

Pursuant to Section 303(c)(3) of the CWA and 40 C.F.R. part 131, I hereby approve the following new and revised water quality standards for all waters in Indian lands:

- 38 M.R.S. § 361-A – Definitions: Fresh surface waters and Estuarine and marine waters;

- 38 M.R.S. § 414-C(3) – Instream color pollution standard;

- 38 M.R.S. § 420(2) and (2.A-G)[7] – Introductory paragraph of section 2, which addresses the definition of "toxic substance" and how toxic substances are to be addressed in WQS; the requirement in 2.A to regulate toxic substances at the levels recommended by EPA, pursuant to CWA Chapter 304(a), and the exception to that requirement for naturally occurring toxic substances but only as it pertains to aquatic life criteria[8]; and the provisions in 2.B through 2.G, related to responsibility and authority for the adoption of statewide and site specific criteria for toxic substances in regulation;

- 38 M.R.S. § 464(1) – Language that identifies the findings, objectives and purpose of Maine's WQS;

- 38 M.R.S. § 464(2) – Procedures for reclassification;

- 38 M.R.S. § 464(4.A(3)) – Language providing Tier 1 protection, but not including the exceptions at 4.A(3)(a) and (b), which EPA disapproved in its February 2, 2015 decision; § 464(4.A(4)) – narrative criteria related to color, taste, and other properties; and § 464(4.A(5)) – pH criterion for estuarine and marine waters[9];

- 38 M.R.S. § 464(4.B) – Narrative criteria for settled and floating substances;

- 38 M.R.S. § 464(4.C)) – Natural conditions clause as it applies to aquatic life criteria[10];

- 38 M.R.S. § 464(4.D) – Policy for determining the assimilative capacity of a river or stream (first sentence);

- 38 M.R.S. § 464(4.E) – Waters in excavations for wastewater treatment purposes;

- 38 M.R.S. § 464(4.F.(1) – (5)) – Antidegradation policy;

- 38 M.R.S. § 465(1.B) – Narrative criteria for aquatic life and dissolved oxygen in Class AA waters;

- 38 M.R.S. § 465(1.C.(2) and (4)) – Prohibition, and certain exceptions to prohibition on discharges to Class AA waters;

- 38 M.R.S. § 465(2.B) – Narrative criteria for aquatic life in Class A waters;

- 38 M.R.S. § 465(2.C, first paragraph) – General requirements on discharges to Class A waters;

---

[7] We note that 38 M.R.S. § 420(2.H) is obsolete and therefore not before EPA for action.
[8] EPA is disapproving the exception in 38 MRS §420(2.A) for naturally occurring toxic substances as it applies to human health criteria. See below.
[9] EPA is disapproving the pH criterion for freshwaters in 38 M.R.S. § 464(4.A(5)). See below.
[10] EPA is disapproving the natural conditions clause in 38 M.R.S. § 464(4.C)) as it applies to human health criteria. See below.

- 38 M.R.S. § 465(3.B) – Numeric criteria for dissolved oxygen in Class B waters;
- 38 M.R.S. § 465(3.C) – Narrative criteria for aquatic life in Class B waters;
- 38 M.R.S. § 465(4.C) – Narrative criteria for aquatic life in Class C waters;
- 38 M.R.S. § 465-A(1.B) – Narrative eutrophication criteria in Class GPA waters;
- 38 M.R.S. § 465-B(1.B) – Narrative criteria for estuarine and marine life and dissolved oxygen in Class SA waters;
- 38 M.R.S. § 465-B(1.C.(2)) – Prohibition, and certain exception to prohibition on discharges to Class SA waters;
- 38 M.R.S. § 465-B(2.B) – Numeric dissolved oxygen criteria and bacteria criteria for the protection of shellfishing in Class SB waters;
- 38 M.R.S. § 465-B(2.C, first sentence) – Narrative criteria for estuarine and marine life in Class SB waters;
- 38 M.R.S. § 465-B(3.B) – Numeric dissolved oxygen criteria and bacteria criteria for the protection of shellfishing in Class SC waters;
- 38 M.R.S. § 465-B(3.C) – Narrative criteria for estuarine and marine life in Class SC waters;
- 38 M.R.S. § 466 – Definitions: Aquatic life, As naturally occurs, Color pollution unit, Combined sewer overflow, Community function, Community structure, Direct discharge, Estuarine and marine life, Indigenous, Invasive species, Natural, Resident biological community, Unimpaired, Use attainability analysis, and Without detrimental changes in the resident biological community;
- 38 M.R.S. § 636(8) – Certification and reclassification provisions related to proposed hydropower impoundments;
- DEP Rule Chapter 581 – Regulations relating to water quality evaluations including: hydrologic conditions for computing assimilative capacity in rivers and streams and in great ponds; minimum flows on regulated streams; zone of passage; and great ponds trophic state;
- DEP Rule Chapter 582(1) – Freshwater temperature criteria[11]; and
- DEP Rule Chapter 585– Identification of fish spawning areas and designation of salmonid spawning areas.

[11] EPA is disapproving the tidal temperature criteria in DEP Rule Chapter 582(2). See below.

Disapprovals

Pursuant to Section 303(c)(3) of the CWA and 40 C.F.R. part 131, I hereby disapprove the following new and revised water quality standards for all waters throughout Maine, including in Indian lands:

- 38 M.R.S. § 363-D – Waiver or modification of protection and improvement laws;
- 38 M.R.S. § 465(2.B) – Numeric criteria for dissolved oxygen in Class A waters; and
- 38 M.R.S. § 465(1.C.(1)) and § 465-B(1.C.(1)) – Exceptions to prohibitions on discharges to Class AA waters and Class SA waters, respectively.

Pursuant to Section 303(c)(3) of the CWA and 40 C.F.R. part 131, I hereby disapprove the following new and revised water quality standards for all waters in Indian lands:

- 38 M.R.S. §420(2.A) – Exception for naturally occurring toxic substances from the requirement to regulate toxic substances at the levels recommended by EPA, as it applies to human health criteria;
- 38 M.R.S. § 451 – Mixing zone policy;
- 38 M.R.S. § 464(4.A.(5)) – pH criterion for freshwaters;
- 38 M.R.S. § 464(4.C)) – Natural conditions clause, as it applies to human health criteria;
- 38 M.R.S. § 465(1.B), § 465(2.B) and § 465-B(1.B) – Narrative criteria for bacteria in Class AA, A, and SA waters, respectively; and
- DEP Rule Chapter 582(5) – Tidal temperature criteria.

Supporting Discussion of Approvals

Findings, Objectives and Purpose [38 M.R.S. §464(1)]

EPA is approving the findings, objectives and purpose expressed in 38 M.R.S. §464(1) because they are consistent with the goals expressed in Section 101(a) of the CWA.

Definitions [38 M.R.S. § 361-A and 38 M.R.S. § 466]

EPA is approving the definitions in 38 M.R.S. §§ 361-A and 466 specified above because they are integral to the WQS program and, in the case of definitions of terms that are also contained in the CWA and the federal WQS, they are generally as broad and protective as the federal

terms.[12] We note that § 361-A refers to the Code of Federal Regulations and the Federal Water Pollution Control Act, both as amended through July 1, 2009. We encourage Maine to update these references when it makes other revisions to its WQS.

Procedures for Reclassifications, Removals of Designated Uses, and Creation of Subcategories of Uses [38 M.R.S. § 464(2), (2-A), and (2-B)]

EPA approves the provisions of 38 M.R.S. § 464(2), (2-A), and (2-B) because they are consistent with the requirements of section 303 of the CWA and with provisions regarding designated uses, removals of uses and creations of subcategories of uses in 40 C.F.R. §131.10.

Natural Conditions Clauses as They Apply to Aquatic Life Criteria [38 M.R.S § 464(4.C) and 38 M.R.S § 420(2.A)]

EPA's review of Maine's natural conditions clauses at 38 M.R.S § 464(4.C) and § 420(2.A) as they apply to aquatic life criteria is based on whether the clauses protect designated aquatic life uses. The clause in 38 M.R.S § 464(4.C) says that, "Where natural conditions, including but not limited to, marshes bogs and abnormal concentrations of wildlife cause the dissolved oxygen criteria or other water quality criteria to fall below the minimum standards…those waters shall not be considered to be failing to attain their classification because of those natural conditions." The clause in 38 M.R.S. § 420(2.A) says, "Except as naturally occurs or as provided in paragraphs B and C, the board shall regulate toxic substances in the surface waters of the State at the levels set forth in federal water quality criteria as established by the United States Environmental Protection Agency pursuant to the Federal Water Pollution Control Act…."

These provisions are consistent with EPA's interpretation of the relationship between natural conditions and the protection of designated aquatic uses, which is articulated in EPA's November 1997 guidance entitled *Establishing Site Specific Aquatic Life Criteria Equal to Natural Background.*[13] EPA recognizes that there may be naturally occurring concentrations of pollutants which exceed the national criteria published under section 304(a) of the CWA. The policy states that "For aquatic life uses, where the natural background concentration for a specific parameter is documented, by definition that concentration is sufficient to support the level of aquatic life expected to occur naturally at the site absent any interference by humans."

EPA approves the natural conditions clauses at 38 M.R.S §464(4.C) and § 420(2.A) as they apply to criteria that protect aquatic life because the application of this provision protects designated aquatic life uses as required by the CWA and federal water quality standards regulations at 40 C.F.R. § 131.11(a).

[12] In any case, for Clean Water Act purposes, federal definitions would apply in the event they are broader than state definitions.

[13] Davies, Tudor, EPA. *Establishing Site Specific Aquatic Life Criteria Equal to Natural Background*, November 5, 1997.

Hydrologic Conditions for Computing Assimilative Capacity [38 M.R.S. § 464(4.D) and DEP Rule Chapter 581(1) - (3)]

Title 38 M.R.S. § 464(4.D) requires that the minimum 7-day low flow which can be expected to occur with a frequency of one in ten years (7Q10 low flow) be used for the purpose of computing whether a discharge will violate the classification of any river or stream, unless otherwise provided for toxic substances and consistent with the risk being addressed. This provision is supplemented by DEP Rule Chapter 530(4.B), which provides greater specificity for flows to be used with acute aquatic life criteria (1/4 of 1Q10) and with human health criteria (harmonic mean flow). EPA approved DEP Rule Chapter 530(4.B) for waters in Indian lands in our February 2, 2015 decision.

Sections 1, 2, and 3 of DEP Rule Chapter 581 also address the hydrologic assumptions to be used when calculating whether a discharge will violate the classification of rivers, streams and great ponds. Section 1 repeats the requirements in at 38 M.R.S. § 464(4.D) by requiring that the 7Q10 low flow be used for the purpose of computing assimilative capacity in rivers and streams. Section 2 authorizes DEP to establish minimum flow requirements in regulated rivers and streams where necessary to maintain WQS. Finally, section 3 requires that hydraulic residence time be used in great ponds for the purpose of computing assimilative capacity and provides a formula for calculating the hydraulic residence time.

As explained in Section 5.2 of EPA's Water Quality Standards Handbook, critical low flow values are important for criteria implementation, to help ensure that criteria are protective of uses.[14] In the *Technical Support Document for Water Quality-based Toxics Control*,[15] EPA also explained that critical flows are necessary to provide a dimension of frequency and duration of pollutant exposure for the evaluation of "reasonable potential"[16] and the derivation of permit effluent limits. EPA approves the provisions related to hydrologic assumptions for critical flow, maintenance of critical flow, and hydraulic residence time in 38 M.R.S. § 464(4.D) and DEP Rule Chapter 581(1), (2), and (3) because they are consistent with EPA's recommendation that states provide critical low flow values in their WQS, and the values themselves are protective of designated uses.

Antidegradation Policy and Related Provisions [38 M.R.S. § 464(4.F.(1)-(5)); 38 M.R.S. § 414-A(1.A, 1.B, and 1.C); 38 M.R.S § 413(11.D); and 38 M.R.S. § 465(2.C, first paragraph)]

1. 38 M.R.S. § 464(4.F.(1)-(5)) – Maine's antidegradation policy is set forth in 38 M.R.S. § 464(4.F.(1)-(5)). As described below, EPA approves 38 M.R.S. § 464(4.F.(1)-(5)) because it is consistent with the federal antidegradation policy at 40 C.F.R. § 131.12.

Subsection 1 requires existing instream water uses and the water quality necessary to protect the existing uses to be maintained and protected, and it identifies various factors DEP must

[14] EPA, *Water Quality Standards Handbook - Chapter 5: General Policies*, Section 5.2, 2015 online version.
[15] EPA, *Technical Support Document for Water Quality-based Toxics Control*, EPA/505/2-90-001, March 1991, Appendix D, page D-6.
[16] "Reasonable potential" refers to the requirement in 40 C.F.R. § 122.44(d) that limitations control all pollutants that that may be discharged at a level which will have the reasonable potential to cause an excursion above any state water quality standard.

consider in determining the existing uses of a water body. Often referred to as "Tier 1" protection, this provision is consistent with 40 C.F.R. § 131.12(a)(1). Subsection 1-A further provides that any proposed activity will not have a significant impact on or cause significant degradation of existing uses.

Subsection 2 provides that where high quality waters constitute an outstanding national resource, that water quality must be protected and maintained. It also identifies the waters that are considered to be outstanding national resource waters ("ONRWs"), including all Class AA and SA waters, and waters in national and state parks, wildlife refuges, and public reserved lands. Often referred to as "Tier 3" protection, the ONRW provision affords the highest level of protection for waters, and it is consistent with 40 C.F.R. § 131.12(a)(3).

Subsection 3 provides protection for both existing and designated uses by allowing discharge licenses to be issued only if the receiving waterbody is meeting applicable WQS and antidegradation requirements; or, where the water body is not meeting applicable WQS, only if the discharge will not cause or contribute to the failure to meet WQS.

Subsection 4 adds further protection of uses by requiring that if the quality of water in a waterbody exceeds the minimum standards of the next highest classification, the Board of Environmental Protection must recommend to the Legislature that the waterbody be reclassified to that next highest classification.

Subsection 5 protects against the lowering of existing water quality in any water body unless DEP finds, after an opportunity for public participation, that the action is necessary to achieve important economic or social benefits to the State and that the action is in compliance with subsection 3 (described above). The protection of high quality waters in subsection 5, often referred to as "Tier 2" protection, ensures that water quality that is better than the minimum needed to attain WQS will be maintained unless the lowering of water quality satisfies specific requirements. EPA interprets the finding required in subsection 5, that "the action [i.e., the lowering of water quality] is necessary to achieve important economic or social benefits to the State," to include a required finding that such lowering is necessary to achieve such benefits "in the areas in which the waters are located," as required in 40 C.F.R. § 131.12(a)(2), and therefore concludes that it is consistent with the federal regulation.

In addition to the statutory Tier 2 provisions, EPA considered DEP's waste discharge license guidance and regulations to determine how Maine interprets those provisions when implementing Tier 2 of its antidegradation policy. DEP's waste discharge program guidance for implementing antidegradation (2001) provides that, in allowing the lowering of water quality, "there shall be achieved the highest statutory and regulatory requirements for all new and existing point sources and all cost-effective and reasonable best management practices for nonpoint sources," as required by 40 C.F.R. § 131.12(a)(2). Further, although 38 M.R.S. § 366, which DEP previously relied on to satisfy the intergovernmental coordination requirement of § 131.12(a)(2), has been repealed, DEP Rule Chapter 522, which governs waste discharge license issuance procedures, provides for intergovernmental coordination in § 8.c, by requiring notice of permit applications and public hearings to be provided to multiple state agencies, ensuring that such agencies would have the opportunity to comment on any wastewater discharge project that proposes a lowering of water quality. Therefore, EPA has determined that 38 M.R.S. § 464(4.F(5)) meets the requirements of EPA's regulations at 131.12(a)(2).

EPA approved some sections of 38 M.R.S. § 464(4.F) in 1986 and did not act on others; disapproved a section in 1987; and then approved the remainder of § 464(4.F), including revisions that satisfactorily addressed the disapproval, in 1990. EPA is today approving 38 M.R.S. § 464(4.F(1)-(5)) in its entirety for tribal waters because it is consistent with 40 C.F.R. § 131.12. At the same time, EPA recommends that Maine clarify and strengthen certain aspects of its Tier 2 protection for all waters. The upcoming triennial review would be a good opportunity for Maine to revise § 464(4.F.(5)) to explicitly provide for intergovernmental coordination, and to require the assurance related to point and nonpoint sources quoted above. Such revisions would clarify and ensure that these requirements will apply to projects that are the subject of CWA section 401 certifications from Maine, as well as to waste discharge licensees.

2. 38 M.R.S. § 414-A(1.A, 1.B, and 1.C) – EPA approves the antidegradation provisions in 38 M.R.S. § 414-A(1.A, 1.B, and 1.C). Section 414-A(1.A and 1.B) provide Tier 1 antidegradation protection by ensuring that discharges, either alone or in combination with others, will not lower the water quality of a water body below its classification (subsection 1.A) or below the classification which the board expects to adopt for such water body (subsection 1.B). Section 414-A(1.C) provides Tier 2 antidegradation protection by prohibiting discharges from lowering existing water quality unless 38 M.R.S. § 464(4.F), and certain specified elements of Tier 2 of the antidegradation policy, are satisfied. All of these provisions supplement and are consistent with 38 M.R.S. § 464(4.F), and they are consistent with 40 C.F.R. § 131.12(a)(1) and (2).

3. 38 M.R.S. § 413(11.D) – EPA approves the antidegradation provision in 38 M.R.S. § 413(11.D) related to mercury discharges. The end of the first paragraph in 38 M.R.S. § 413(11) requires facilities that discharge mercury to meet interim limits established under paragraph 11, "notwithstanding" 38 M.R.S. § 464(4.F)) (Maine's antidegradation policy). Among such interim limits are those that may be established under § 413(11.D) for a new or expanded discharge of mercury provided that specified requirements, which are essentially a restatement of Tier 2 antidegradation provisions, are satisfied. EPA's approval of § 413(11.D) is based on the understanding that it is merely a confirmation that a new or expanded discharge of mercury must satisfy Tier 2 antidegradation requirements, and that the introductory "notwithstanding" language does not mean that the full scope of the antidegradation policy at § 464(4.F), including Tier 1 and Tier 3 protection, is inapplicable to such discharges. Because of the ambiguity created by the introductory "notwithstanding" clause, however, EPA requests confirmation from Maine's Attorney General that EPA's interpretation upon which it bases this approval is correct.

4. 38 M.R.S. § 465(2.C) – The first paragraph of 38 M.R.S. § 465(2.C) requires discharges to Class A waters licensed after January 1, 1986 to meet an effluent quality equal to or better than the receiving water, and to demonstrate that the discharge is necessary and there are no reasonable alternatives available; and it allows discharges licensed before that date to continue only until practical alternatives exist. EPA approves these provisions because they supplement the antidegradation provisions of § 464(4.F) and strengthen the protection of the designated uses of Class A waters.

Class GPA Trophic State Criteria [38 M.R.S § 465-A(1.B) and DEP Rule Chapter 581(6)]

EPA's review of the narrative criteria, in 38 M.R.S § 465-A(1.B), for the trophic state of Class GPA waters and the numeric criteria for the trophic state of great ponds and lakes, in DEP Rule Chapter 581(6), is based on whether the criteria support designated uses for those waters.

The narrative criteria in 38 M.R.S § 465-A(1.B) state that Class GPA waters must have a stable or decreasing trophic state (as measured by chlorophyll "a" content, Secchi disk transparency, total phosphorus content and other appropriate criteria), subject only to natural fluctuations, and must be free of culturally induced algal blooms that impair their use and enjoyment. The narrative criteria are explicitly protective of uses and are based, at least in part, on a causal measure (phosphorus) and response indicators (chlorophyll "a" and Secchi disk transparency) that EPA agrees are good indicators of eutrophication.[17]

DEP Rule Chapter 581(6) is entitled "Great Ponds Trophic State," but includes references to "all lakes" and GPA waters. Therefore, EPA understands that DEP Rule Chapter 581(6) applies to all Class GPA waters as defined in 38 M.R.S § 465-A(1) to be "great ponds and natural ponds and lakes less than 10 acres in size" and that it is intended to provide a numeric interpretation of the "stable or decreasing trophic state" part of the narrative criteria in 38 M.R.S § 465-A(1.B). Chapter 581(6) provides that a GPA water cannot be considered to have a stable or declining trophic state if values of the Maine Trophic State Index (TSI) are increasing or there is an onset of algal blooms. The TSI is calculated using chlorophyll "a" unless the lake is colored (less than 30 standard platinum units), in which case the basis for the calculation is total phosphorus concentration or mean Secchi disk transparency. Algal blooms are defined as planktonic growth of algae which causes Secchi disk transparency to be less than 2.0 meters. EPA finds that these are reasonable measures for identifying whether the trophic state of a lake is increasing, which can be an early warning sign that cultural eutrophication is occurring.

EPA approves both the narrative criteria in 38 M.R.S. § 465-A(1.B), because they explicitly protect designated uses, and the provisions of DEP Rule Chapter 581(6), because they provide a scientifically sound numeric interpretation of a part of the narrative criteria, which enhances the protection of uses.

Zone of Passage [DEP Rule Chapter 581(5)]

EPA's review of the provision in DEP Rule Chapter 581(5) is based on whether the provision is protective of designated uses. The provision requires that all discharges shall provide for a zone of passage for free-swimming and drifting organisms that is at least three quarters of the cross-sectional area at any point in the receiving water. The zone of passage can be smaller if the discharger can demonstrate that because of physical phenomena in the receiving water body, such a minimum zone cannot be maintained and the minimum zone is not necessary to protect organisms in the receiving water from substantial adverse effect.

---

[17] EPA, *Nutrient Criteria, Technical Guidance Manual, Lakes and Reservoirs, First Edition*, EPA-822-B00-001, April 2000, pages 1-12 to 1-13.

EPA guidance provided in the *Water Quality Standards Handbook*[18] recommends that where there is incomplete mixing in a receiving water, pollutant loading be limited so that mixing zones are small enough to allow a zone of passage for free swimming and drifting organisms without significant adverse effects on their populations, including migration for anadromous and catadromous species. EPA approves Maine's provision because it ensures that there will be ample passage for free-swimming and drifting organisms outside the mixing zone, and where the zone of passage needs to be smaller, the provision guards against substantial adverse effects to such organisms. Therefore the provision is consistent with EPA's guidance and protective of the aquatic life designated use.

Waters Contained in Excavations Approved for Wastewater Treatment Purposes [38 M.R.S. § 464(4.E)]

The provision in 38 M.R.S. § 464(4.E) identifies as unclassified (and thus without designated uses) those waters contained in excavations approved for wastewater treatment purposes. EPA approves this provision with the understanding that it is limited to waters that are "waste treatment systems" that do not fall within Clean Water Act jurisdiction as "waters of the United States," as provided at 40 C.F.R. § 122.2.

WQS Related to Hydropower Projects [38 M.R.S. § 464(4.H), (9-A.A), (9-A.D), (9-A.E), (10), and (11); and 38 M.R.S. § 636(8)]

1. 38 M.R.S. § 464(4.H), (9-A.D), (9-A.E), (10), and (11) – EPA has reviewed the revised WQS related to hydropower projects in 38 M.R.S. § 464(4.H), (9-A.D), (9-A.E), (10), and (11), all of which were initially enacted in essentially the same form in 1992 (P.L. 1992, c. 813), and which clarify water quality classifications and criteria applicable to hydropower impoundments and water segments immediately downstream of hydropower dams. EPA approves all of these revisions for the reasons discussed below.

The revisions at 38 M.R.S. § 464(9-A.D) and (9-A.E) (originally enacted as the last two paragraphs of § 464(9)), apply to existing hydropower impoundments classified as Great Ponds under 38 M.R.S. § 465-A. They reflect the legislature's purpose of clarifying that the Class GPA criterion that "habitat must be characterized as natural" was not intended to apply to existing human-constructed great pond impoundments. Accordingly, § 464(9-A.D) requires such waters to, at a minimum, meet Class C habitat and aquatic life criteria, and § 464(9-A.E) requires that where the actual water quality in such impoundments attain any more stringent criteria required by the GPA classification, such water quality must be protected and maintained.

The revisions at 38 M.R.S. § 464(10) apply to existing hydropower impoundments managed under riverine classifications under 38 M.R.S. § 465. These reflect the legislature's purpose of clarifying that Class A and B habitat and aquatic life uses and criteria defined as "natural" and "unimpaired" were intended to apply to free-flowing streams, and not to existing hydropower impoundments. Accordingly, § 464(10) provides that the Class A and B habitat characteristics

[18] EPA, *Water Quality Standards Handbook - Chapter 5: General Policies*, Section 5.1.1, subsection on mixing zone size, 2015 online version.

and aquatic life criteria are deemed to be met in existing hydropower impoundments as long as Class C aquatic life criteria are met. It further provides, however, that if reasonable changes can be made that would result in the improvement of habitat and aquatic life, such changes must be implemented and the resulting improved water quality must be achieved and maintained. In addition, where the actual water quality in such impoundments attain any more stringent criteria required by the applicable Class A or Class B criteria, that water quality must be protected and maintained.

The revisions at 38 M.R.S. § 464(11) apply to downstream stretches below two existing hydropower projects on the Kennebec River and two existing hydropower projects on the Saco River.[19] These revisions also reflect the legislature's purpose of clarifying that Class A habitat and aquatic life uses and criteria defined as "natural" were intended to apply to unaffected, free-flowing streams. Accordingly, § 464(11) provides that the Class A habitat characteristics and aquatic life criteria applicable to these segments are deemed to be met as long as Class C aquatic life criteria are met.

The revisions at 38 M.R.S. § 464(4.H) allow hydropower projects constructed after 1991 to cause some change to the habitat and aquatic life of the project's impoundment and the waters immediately downstream of and measurably affected by the project, so long as the habitat and aquatic life criteria of the applicable waters' classifications under § 465 (standards for classifications of freshwaters), § 465-A (standards of classification for lakes and ponds), § 467 (classifications of major river basins), and § 468 (standards of classification for minor drainages) are met. It specifically provides that it does not alter the habitat and aquatic life criteria under §§ 465 and 465-A.

It is not clear that EPA ever approved 38 M.R.S. § 464(4.H), (9-A.D), (9-A.E), (10), and (11).[20] Therefore, EPA is today approving these provisions as applied to all waters in Maine. As EPA acknowledged in several letters to Maine in 1992 and 1993,[21] the requirements to meet "natural" or "unimpaired" habitat and aquatic life characteristics are not necessarily appropriate for existing hydropower impoundments since they are, by their very nature, artificial. In its review of proposed legislation in 1992, EPA informed DEP that it was willing to accept, as satisfying federal UAA requirements, a single legislative finding that the "natural" and "unimpaired" criteria were not intended for existing impoundments to justify a change in the habitat and aquatic life criteria applicable to such impoundments, as long as Class C criteria at 38 M.R.S. § 465(4.C) are required to be met. The Class C criteria allow some changes to aquatic life as long as the waters are of sufficient quality to support all species of indigenous

---

[19] These segments are not waters in Indian lands.

[20] EPA disapproved § 464(9), contained in "Part A" of P.L. 1992 c. 813, on January 14, 1993. Section 464(9) included the original versions of current subsections (9-A.D) and (9-A.E)), but EPA's disapproval did not relate to those provisions. EPA did not act at that time, or apparently at any later time, on other portions of the statute (including § 464(4.H) and (10)). On March 25, 1993, EPA approved a UAA that Maine prepared to address the January 14, 1993 disapproval and to support a subsequent amendment of § 464(9). It is not apparent that Maine ever submitted revised § 464(9) at any time before its May 2000 submission of all of its WQS to EPA's repository. In 2005, § 464(9) was repealed and its provisions were relocated to new § 464(9-A), and entirely new provisions were also added to section 9-A. Maine submitted the new provisions to EPA by letter dated January 11, 2006, and EPA approved them by letter dated April 17, 2006, but not the relocated provisions from § 464(9).

[21] Letters dated January 28, 1992, from Tonia Bandrowicz, EPA to Stephen Groves, DEP; February 4, 1992, from Tonia Bandrowicz, EPA to Stephen Groves, DEP ; November 25, 1992, from Ronald Manfredonia, EPA to Stephen Groves, DEP; and March 25, 1993, from Paul Keough, EPA to Dean Marriott, DEP.

fish and maintain the structure and function of the resident biological community. EPA concludes that the revisions at 38 M.R.S. § 464(9-A.D), (9-A.E), and (10) are consistent with EPA's advice to DEP in 1992 and 1993; are reasonable in light of the legislature's statement of original intent to apply "natural" and "unimpaired" to free-flowing waters and not artificially impounded waters; and by requiring attainment of at least Class C criteria (or better), are protective of existing and designated aquatic life uses. EPA concludes that the same reasoning applies to 38 M.R.S. § 464(11), for which the legislature provided a similar statement of original intent to apply the "natural" habitat and aquatic life criteria only to unaffected and free-flowing waters, and that by requiring attainment of at least Class C criteria, § 464(11) is protective of existing and designated aquatic life uses.

EPA concludes that 38 M.R.S. § 464(4.H) is protective of existing and designated uses because it specifies that any new (post-1992) hydropower project must meet the habitat and aquatic life criteria applicable to the water body's classification. While this section allows some change to habitat and aquatic life, EPA interprets this change to be allowed only if consistent with the antidegradation policy in 38 M.R.S. § 464(4.F), since nothing in § 464(4.H) precludes the applicability of § 464(4.F). EPA's approval is based on this interpretation.

2. 38 M.R.S. § 464(9-A.A) – EPA has reviewed 38 M.R.S. § 464(9-A.A), which establishes habitat and aquatic life criteria for the impounded segment of the West Branch of the Penobscot River above the Ripogenus dam.[22] In 1993, EPA disapproved the original version of this section (enacted in 1992 as § 464(9)), and Maine subsequently prepared a Use Attainability Analysis ("UAA") to support the establishment of less stringent habitat and aquatic life criteria than would otherwise apply. EPA approved the Ripogenus UUA on March 25, 1993, consistent with 40 C.F.R. § 131.10(g)(4), based on the determination that the existence and operation of the dam precludes the attainment of Class C aquatic life and habitat criteria. EPA further found that it would not be possible to operate the dam in a manner that could attain the use, in part because the aquatic community that had evolved in the impoundment and downstream was an important fishery that would be placed at risk if dam operations were significantly changed. Maine subsequently revised § 464(9) consistent with the UAA, and then relocated it to new § 464(9-A.A) in 2005 (see footnote 19 for additional information). EPA has no record of having previously approved revised § 464(9). EPA approves the provision today in its current form of § 464(9-A.A), consistent with EPA's approval of the UAA.

3. 38 M.R.S. § 636(8) – EPA has reviewed the revised WQS in 38 M.R.S. § 636(8), which requires that there be reasonable assurance that a proposed hydropower project will not violate applicable WQS, including antidegradation requirements, both in the impounded area and in waters downstream of the impoundment. It further directs DEP to reclassify impounded waters from a proposed project as GPA if certain showings are made, including that the project would comply with antidegradation requirements.

Maine enacted this provision in response to EPA's May 25, 1987 disapproval of prior legislation that automatically deemed such proposed impoundments to be GPA. EPA approved 38 M.R.S. § 636(8) on December 20, 1990. EPA today approves this provision for waters in Indian lands, because it ensures that WQS, including antidegradation requirements, will be met both upstream and downstream of the proposed project, and it provides for reclassification to

[22] This segment is not a water in Indian lands.

GPA only if the DEP makes specific findings, including that antidegradation requirements will not be violated. EPA approves this provision with the understanding that the procedures for reclassification in 38 M.R.S. § 464(2), particularly regarding public participation, still apply to any reclassification pursuant to this section. This provision is protective of both designated and existing uses and consistent with the requirements of section 303 of the CWA and 40 C.F.R. part 131.

Downstream Protection for Class GPA Waters [38 M.R.S § 464(4.A(3))]

EPA's review of the downstream protection provision in 38 M.R.S § 464(4.A(3)) is based on whether the provision is protective of designated uses. The provision prohibits discharges to tributaries of Class GPA waters that would impair the characteristics and designated uses of downstream GPA waters or cause an increase in the trophic state of those GPA waters. EPA approves this narrative protection of downstream waters because it is protective of designated uses in Class GPA waters and is consistent with the requirement in 40 C.F.R. § 131.10(b) that States take into consideration the water quality standards of downstream waters and ensure that its water quality standards provide for the attainment and maintenance of the water quality standards of downstream waters.

Criteria for Color, Taste, Turbidity, Toxicity, Radioactivity and Other Properties [38 M.R.S § 464(4.A(4))]

EPA is approving the narrative criteria in 38 M.R.S § 464(4.A(4)) because the provision protects designated uses by prohibiting levels of these substances that would cause the waters to be unsuitable for the designated uses.

Criterion for pH in Estuarine and Marine Waters[23] [38 M.R.S § 464(4.A(5))]

EPA's review of the pH criterion for estuarine and marine waters in 38 M.R.S § 464(4.A(5)) is based on whether the criterion protects aquatic life uses in those waters. The criterion prohibits discharges that cause pH in estuarine and marine waters to fall outside of the 7.0 to 8.5 range. EPA's current pH recommendation is included in the 1986 Gold Book, which recommends pH in the range of 6.5 to 8.5 to protect marine aquatic life[24]. Since Maine's pH range for estuarine and marine waters is within that range, EPA finds that the pH criterion for estuarine and marine waters in 38 M.R.S § 464(4.A(5)) is protective of designates uses and approves it accordingly.

Criteria for Settled and Floating Substances [38 M.R.S. § 464(4.B)]

EPA's review of Maine's narrative criteria for settled and floating substances in 38 M.R.S. § 464(4.B) is based on whether the criteria are protective of designated uses. The provision states that "surface waters shall be free of settled substances which alter the physical or chemical nature of bottom material and of floating substances, except as naturally occur, which impair the characteristics and designated uses ascribed to their class." EPA approves of the narrative criteria because they are explicitly protective of designated uses.

[23] As discussed below, EPA is disapproving the pH criterion for freshwaters.
[24] EPA, *Quality Criteria for Water 1986,* EPA 440/5-86-001, pH, May 1, 1986.

Instream Color Pollution Standard [38 M.R.S § 414-C(3)]

EPA approves the instream color pollution standard in 38 M.R.S § 414-C(3). This provision is protective of applicable designated uses because it defines a maximum total impact from discharges and thus provides an numeric threshold for waters to meet the narrative color criteria in 38 M.R.S. § 464(4.A.(4)) and is at least as protective as the EPA-recommended narrative criterion, which says that "waters shall be virtually free from substances producing objectionable color for aesthetic purposes."[25]

Dissolved Oxygen ("DO") for Class AA and SA Waters, and Aquatic Life Criteria for Class A, AA, and SA Waters [38 M.R.S. § 465(1.B and 2.B) and 38 M.R.S. § 465-B(1.B)]

EPA's review of the narrative criteria for aquatic life for Class AA, A and SA waters (in 38 M.R.S. § 465(1.B and 2.B) and § 465-B(1.B), respectively) and the narrative criteria for dissolved oxygen in Class AA and SA waters (in 38 M.R.S. § 465(1.B) and § 465-B(1.B), respectively) is based on whether the narrative criteria are protective of the designated uses of habitat for fish and other aquatic life. The criteria require that aquatic life for Class AA, A and SA waters and DO for Class AA and SA waters be as naturally occurs. Since the term "as naturally occurs" is defined in 38 M.R.S. § 466(2) to mean "conditions with essentially the same physical, chemical and biological characteristics as found in situations with similar habitats free of measurable effects of human activity," EPA finds that these narrative criteria are protective of the aquatic life designated uses. Therefore EPA approves these criteria.

Narrative Aquatic Life Criteria for Class B, C, SB and SC Waters [38 M.R.S. § 465(3.C); 38 M.R.S. § 465(4.C); 38 M.R.S. § 465-B(2.C); and 38 M.R.S. § 465-B(3.C)]

EPA's review of the narrative criteria for aquatic life in Class B, C, SB and SC waters expressed in the first sentences of 38 M.R.S. § 465(3.C); 38 M.R.S. § 465(4.C); 38 M.R.S. § 465-B(2.C); and 38 M.R.S. § 465-B(3.C), respectively, is based on whether the narrative criteria for aquatic life, expressed as a minimum condition remaining following the impact of discharges, support the designated uses for these water classifications.

The designated uses for Class B and SB waters are similar: "habitat for fish and other aquatic life" and "habitat must be characterized as unimpaired" for Class B waters (at 38 M.R.S. § 465(3.A)); and "habitat for fish and other estuarine and marine life" and "habitat characterized as unimpaired" for Class SB waters (at 38 M.R.S. § 465-B(2.A)). The narrative criteria to support these uses require that the waters be of sufficient quality to support all aquatic, estuarine, and marine species (as appropriate) indigenous to those waters without detrimental changes in the resident biological community. Maine defines "unimpaired" as "without diminished capacity to support aquatic life" at 38 M.R.S. § 466(11); "residential biological community" as "aquatic life expected to exist in a habitat which is free from the influence of the discharge of any pollutant" at 38 M.R.S. § 466(10); "indigenous" as "supported in a reach of water or known to have been supported according to historical records compiled by State and Federal agencies or published scientific literature" at 38 M.R.S. § 466(8); and "without detrimental changes to the resident biological community" as "no significant loss of species or

[25] EPA, *Quality Criteria for Water 1986,* EPA 440/5-86-001, Color, May 1, 1986.

excessive dominance by any species or group of species attributable to human activity" at 38 M.R.S. § 466(12). Based on these definitions, EPA finds that the narrative criteria for Class B and SB waters in the first sentences of 38 M.R.S. § 465(3.C) and 38 M.R.S. § 465-B(2.C), respectively, do support the designated uses, including the designated use of unimpaired habitat, and EPA therefore approves these criteria.

The designated uses for Class C and SC waters are also similar: "habitat for fish and other aquatic life" at 38 M.R.S. §465(4.A) and "habitat for fish and other estuarine and marine life" at 38 M.R.S. § 465-B(3.A). The narrative criteria to support these uses require that "discharges to Class C waters may cause some changes to aquatic life, except that the receiving waters must be of sufficient quality to support all species of fish indigenous to the receiving waters and maintain the structure and function of the resident biological community." Similarly, "discharges to Class SC waters may cause some changes to estuarine and marine life provided that the receiving waters are of sufficient quality to support all species of fish indigenous to the receiving waters and maintain the structure and function of the resident biological community." Maine defines "community function" as "mechanisms of uptake, storage, and transfer of life-sustaining materials available to a biological community which determines the efficiency of use and the amount of export of the materials from the community" at 38 M.R.S. § 466(3), and "community structure" as the organization of a biological community based on numbers of individuals within different taxonomic groups and the proportion each taxonomic group represents of the total community" at 38 M.R.S. § 466(4). Based on these definitions, combined with the pertinent definitions in the previous paragraphs, EPA finds that the narrative criteria for Class C and SC waters in the first sentences of 38 M.R.S. § 465(4.C) and 38 M.R.S. § 465-B(3.C), respectively, do support the designated uses, and EPA therefore approves these criteria.

<u>Freshwater Temperature Criteria</u> [DEP Rule Chapter 582(1)]

EPA's review of Maine's freshwater temperature criteria in DEP Rule Chapter 582(1) is based on whether the criteria protect designated aquatic life uses, including all life stages of indigenous and endangered species. The criteria include several components, all expressed as measured at a point outside a mixing zone established by the Board of Environmental Protection. The maximum allowable temperature increase ("delta T") due to any discharge is 3° F in the epilimnion of any lake or pond and 5° F in all other freshwaters. The ambient temperature due to discharges may not exceed 85° F, nor may it exceed EPA's "national ambient water quality criteria established to protect all species of fish that are indigenous to the receiving waters." Site specific criteria that are protective of indigenous species may also be developed. In addition, when ambient temperatures of the receiving water naturally exceed the maximum temperature criteria provided in Chapter 582(1), then the delta T is limited to 0.5° F.

EPA is approving the freshwater temperature criteria with the understanding that EPA's recommended criteria will generally be the applicable criteria, because, with few exceptions, the maximum allowable temperature of 85° F is not protective of aquatic life uses, especially for many fish species that are indigenous to Maine waters. For example, the maximum allowable temperature of 85° F (29.4° C) is above temperatures which cause lethality in all life

stages of endangered Atlantic salmon (including adult migration and smolt emigration).[26] Brook trout exhibit a similar temperature tolerance range, where temperatures above 24° C (75° F) result in little to no growth.[27] EPA also finds that the delta T of 5° F may not adequately protect aquatic life in some waters, because, depending on the starting temperature, a 5° F temperature rise could result in temperatures that do not support various life stages of indigenous fish. For example, National Marine Fisheries Service, in providing input to EPA regarding the appropriateness of Maine's freshwater temperature criteria related to the endangered Atlantic salmon, said the following about the delta T of 5° F:

> We are particularly concerned that the five degree (Fahrenheit) limit…could increase the temperature of nearly every salmon river in the State of Maine above the survival thresholds for the freshwater life stages of Atlantic salmon…. Warming of rivers and streams during the spring and summer could increase temperatures outside of the optimal window for feeding and possibly outside the window for survival of fry and parr. Spring and summer warming may also inhibit adult migration or result in direct or indirect mortality. Warming of river temperatures in the spring would narrow the window of time that would allow successful passage of salmon smolts (the life stage where salmon are transitioning from freshwater to saltwater) that can only occur between 5 and 10° C. Any warming of river temperatures in the winter would have the effect of advancing development of eggs and alevins. If this occurs too quickly, they may use up available energy stores in the egg before food in the river is available. This too could have the effect of narrowing the window of a key development phase. Given the precarious state of salmon in the GOM DPS [Gulf of Maine Distinct Population Segment], anthropogenic changes in water temperatures that alter temperatures in a way that could interfere with Atlantic salmon migratory behaviors or embryonic and juvenile development may pose a significant risk to the species. [28]

Therefore, EPA expects that the requirement in Maine's freshwater temperature criteria that ensures that ambient temperatures do not exceed EPA's national ambient water quality criteria recommendations for all species of indigenous fish will typically supersede the default maximum 85° F temperature limit and 5° F delta T. EPA's recommended temperature criteria provide a methodology for deriving temperature criteria on a site specific basis, depending on the species present or expected to be present and the pertinent life stages. EPA recommends, as described in the Gold Book,[29] that temperature criteria for any time of the year consist of two upper limiting temperatures for a specific location based on the important sensitive species and life stages found there during that time of year. One limit is a maximum temperature for short exposures that is time dependent and based on the results of experimental data for the sensitive species. The second value is a weekly average temperature which would vary seasonally and also be based on temperature sensitivity of the species present. Four species dependent options for deriving the weekly average temperature thresholds are provided in the Gold Book.

---

[26] May 13, 2015 Letter from John K. Bullard, National Marine Fisheries Service, to Ralph Abele, EPA.
[27] Picard C, Bozek M and Walter Momot, *Effectiveness of Using Summer Thermal Indices to Classify and Protect Brook Trout Streams in Northern Ontario*, North American Journal of Fisheries Management 23:206–215, 2003
[28] May 13, 2015 Letter from John K. Bullard, National Marine Fisheries Service, to Ralph Abele, EPA, page 5.
[29] EPA, *Quality Criteria for Water 1986*, EPA 440/5-86-001, Temperature, May 1, 1986.

EPA approves DEP Rule Chapter 582(1) because it requires that temperatures in the receiving waters not exceed EPA recommended criteria for indigenous species, which include temperature sensitive species such as brook trout and the endangered Atlantic salmon. EPA's recommended criteria are based on sound science and provide a methodology for deriving ambient temperatures that are protective of such species. By incorporating EPA's recommended criteria, Maine's criteria are protective of aquatic life uses.

EPA approves the criteria as applicable to freshwaters, whether or not there is a mixing zone. If the Board does establish a mixing zone, then compliance for dischargers is to be measured at the edge of the mixing zone. As a result of EPA's disapproval today of Maine's mixing zone policy, discussed below, EPA expects that Maine will revise its policy and ensure that subsequently established mixing zones, including for temperature, will be protective of all uses, including aquatic life uses for indigenous species such as the endangered Atlantic salmon.

DO Criteria for Class B, SB and SC Waters [38 M.R.S. § 465(3.B); 38 M.R.S. § 465-B(2.B); and 38 M.R.S. § 465-B(3.B)]

EPA's review of Maine's DO criteria for aquatic life for Class B fresh waters in 38 M.R.S. § 465(3.B), is based on whether the criteria protect aquatic life uses, including consideration of EPA's National Recommended Water Quality Criteria published pursuant to Section 304(a) of the CWA. The criteria require that DO content be at least 7 mg/l or 75% of saturation, whichever is higher, from May 15th to September 30th. From October 1st to May 14th, in order to ensure spawning and egg incubation of indigenous fish species, the 7-day mean DO content must be at least 9.5 mg/l and the 1-day minimum DO content must be at least 8 mg/l in identified fish spawning areas. The spawning and egg incubation criteria are consistent with EPA's *Quality Criteria for Water 1986* ("Gold Book")[30] recommendations for protection of early life stages of coldwater species. The minimum DO criterion of 7 mg/l year-round for non-spawning areas and during the summer months for spawning areas, is at least as protective as EPA's recommendations for other life stages of coldwater species and all life stages of warmwater species (3 to 6.5 mg/l). EPA approves the DO criteria for Class B waters because they are based on sound science and protective of designated uses for the reasons provided in EPA's Gold Book.

EPA's review of the DO aquatic life criteria in 38 M.R.S. § 465-B(2.B) (for Class SB estuarine and marine waters, DO at least 85% saturation); and § 465-B(3.B) (for Class SC waters, DO at least 70 % saturation) is similarly based on whether the criteria protect aquatic life uses, including consideration of EPA's National Recommended Water Quality Criteria published pursuant to Section 304(a) of the CWA and DO criteria for Canadian marine waters.

EPA's current recommendations for saltwater DO criteria[31] of 4.8 mg/l for chronic exposure and 2.3 mg/l for acute exposure were developed to protect aquatic life in east coast Atlantic and estuarine waters in the Virginia Province (ranging from Cape Cod, Massachusetts to Cape Hattaras, North Carolina). These values are not directly comparable to Maine's criteria, which are expressed as percent saturation rather than as a DO concentration. However, it is possible

[30] EPA, *Quality Criteria for Water 1986*, EPA 440/5-86-001, Dissolved Oxygen, May 1, 1986.
[31] EPA, *Ambient Aquatic Life Water Quality Criteria for Dissolved Oxygen (Saltwater): Cape Cod to Cape Hatteras*, EPA-822-R-00-012, November 2000.

to compare EPA's DO recommendations for the Virginia Province to Maine criteria for coastal waters by accounting for the differences in ambient temperatures. During the critical summer period (May 15th through September 30th), ambient monthly average coastal temperatures range up to 52° F (11° C) at the National Oceanic and Atmospheric Administration's ("NOAA") ambient water temperature monitoring location near Eastport, Maine. Using the 52° F ambient temperature and a DO-to-percent-saturation conversion table,[32] EPA's recommended minimum values for the Virginia Province translate to 32% saturation for chronic exposure and 21% saturation for acute exposure, both well below Maine's criteria of 70% and 85% saturation.

In evaluating Maine's criteria, EPA also reviewed the Canadian Water Quality Guidelines for the Protection of Aquatic Life for marine dissolved oxygen.[33] Canadian guidelines recommend a minimum concentration of DO in marine and estuarine waters of 8.0 mg/l, or at 11° C, 73% DO saturation[34], within the range of Maine's criteria of 85% and 70% saturation for Class SB and SC waters respectively.

EPA approves Maine's DO criteria for SB and SC waters because they are protective of aquatic life uses in estuarine and marine waters.

Identification of Spawning Areas and Applicable DO Criteria [DEP Rule Chapter 585 and the last two sentences of 38 M.R.S. § 465(4.B)]

EPA's review of DEP Rule Chapter 585, which specifies how fish spawning areas in Class B waters and salmonid spawning areas in Class C waters are to be identified and the applicable DO criteria for such areas, is based on whether the requirements are supportive of aquatic life uses in Class B and C waters.

DO criteria set forth in 38 M.R.S. § 465(3.B) and (4.B) for Class B and C waters, respectively, include special numeric DO criteria for October 1 - May 14 in all spawning areas in Class B waters and narrative DO criteria in salmonid spawning areas in Class C waters, and § 465(4.B) further directs the Board to adopt rules for designation of spawning areas. The identification of spawning areas in these waters is critical to the protection of the use. In accordance with Chapter 585, prior to licensing or relicensing any wastewater discharge that may affect DO, DEP is required to request that the Maine Department of Inland Fisheries and Wildlife (DFW) identify existing or potential fish spawning areas. As the state agency with responsibility for managing fisheries, DFW has the resources and expertise, such as fisheries biologists, habitat inventories, and river reports, to make such identifications.

In addition, Chapter 585(1) includes the DO requirements that are specified in § 465(3.B) for spawning areas in Class B waters; and Chapter 585(3) specifies that in designated spawning areas in Class C waters, DO criteria shall not fall below the EPA recommended criteria for spawning for the period October 1- May 14. If levels of DO fall below EPA's recommended criteria, then corrective action is required or a UAA must be conducted,

---

[32] http://www.usawaterquality.org/volunteer/pdf/Special/DOConvTbl.pdf

[33] Canadian Council of Ministers of the Environment, Canadian Water Quality Guidelines for the Protection of Aquatic Life, Dissolved Oxygen (Marine), Excerpt from Publication No. 1299; ISBN 1-896997-34-11999.

[34] Conversion to % saturation using conversion table at http://www.usawaterquality.org/volunteer/pdf/Special/DOConvTbl.pdf

EPA approves the last two sentences of 38 M.R.S. § 465(4.B) related to the adoption of rules governing designation of spawning areas, and all of Rule Chapter 585. EPA approves the requirements for spawning area identification in Chapter 585 because this coordination is necessary to ensure that DO criteria are implemented in a manner that protects aquatic species with reproductive cycles that are sensitive to low DO levels. EPA approves the DO criteria for Class B spawning areas for the reasons discussed above related to 38 M.R.S. § 465(3.B), and approves the DO criteria for Class C spawning areas because they require DO to be at least as high as EPA's recommended criteria, which are based on sound science and are protective of the designated use.

Shellfishing Bacteria Criteria for Class SB and SC Waters [38 M.R.S. § 465-B(2.B and 3.B)]

EPA's review of Maine's bacteria criteria for the protection of shellfishing uses in Class SB and SC waters (in 38 M.R.S. § 465-B(2.B and 3.B), respectively) is based on whether the criteria are protective of the "propagation and harvesting of shellfish" use in Class SB waters and the "propagation and restricted harvesting of shellfish" use in Class SC waters.

The shellfishing criteria for Class SB and SC waters are identical: "The numbers of total coliform bacteria or other specified indicator organisms in samples representative of the waters in shellfish harvesting areas may not exceed the criteria recommended under the National Shellfish Sanitation Program [("NSSP")], United States Food and Drug Administration." Since this reference to the NSSP recommendations was enacted in 1986,[35] the NSSP recommendations in effect in 1986 are the applicable criteria for Class SA and SB waters. NSSP's bacteria recommendations for unrestricted (as for Class SB waters) and restricted (as for Class SC waters) harvesting of shellfish have not changed since 1986.[36,] EPA's recommendation for shellfishing bacteria criteria, provided in the 1986 Gold Book,[37] are the same as the NSSP criteria for unrestricted harvesting of shellfish. EPA does not have a bacteria criteria recommendation for restricted harvesting of shellfish.

EPA approves the shellfishing bacteria criteria for Class SB and SC waters in 38 M.R.S. § 465-B(2.B and 3.B), because they reflect the current NSSP and EPA recommendations and are therefore protective of the designated uses. While we approve these provisions, we recommend that Maine adopt the NSSP numeric shellfishing bacteria criteria directly into WQS rather than by reference to undated recommendations. This would ensure that the requirements are clear on their face, and would avoid confusion if NSSP recommendations change in the future.

Compliance Schedule [38 M.R.S. § 414-A(2)]

EPA approves 38 M.R.S. § 414-A(2), which authorizes the use of compliance schedules in discharge licenses to meet final effluent limitations based on a water quality standard adopted

---

[35] "An Act to Amend the Classification System for Maine Waters and Change the Classification System of Certain Waters," Maine Public Laws, l12th Legislature, Chapter 698 (the "Reclassification Act").

[36] See National Shellfish Sanitation Program Manual of Operations Part I, Sanitation of Shellfish Growing Areas, revised 1986; and NSSP, Guide for the Control of Molluscan Shellfish, 2013 Revision.

[37] EPA *Quality Criteria for Water 1986*, EPA 440/5-86-001, Bacteria, May 1, 1986

after July 1, 1977. The purpose of such a schedule is, where appropriate, to afford a permittee adequate time to comply with permit requirements that are based on new or revised water quality standards. EPA approves this provision because it is consistent with EPA's interpretation of the circumstances under which such compliance schedules may be provided consistent with the federal Clean Water Act.

Toxic Substances [38 M.R.S. § 420(2) and (2.A) through (2.G)]

EPA's review of the WQS provisions in 38 M.R.S. § 420(2) and (2.A) through (2.G), which provide direction to the Board of Environmental Protection ("Board") regarding the establishment of water quality criteria for toxic substances, is based on whether the resulting criteria would be protective of designated uses.

The introductory text in 38 M.R.S. § 420(2) generally identifies the scope of toxic substances to be regulated and defines the term "toxic substance." The provision requires that the Board take into consideration the toxicity, persistence and degradability of the substance as well as the sensitivity of organisms, including humans, potentially affected by the substance, either alone or in combination with substances already present. The definition of "toxic substance" is generally consistent with the CWA's definition of "toxic substances" in CWA § 502(13). EPA approves the introductory text in 38 M.R.S. § 420(2) because it is consistent with the requirements in 40 C.F.R. § 131.12(a)(2), which require states to adopt water quality criteria for toxic pollutants and to protect designated uses, and because the provisions explicitly require that sensitive organisms be protected.

The provisions in 38 M.R.S. § 420(2.A) through (2.G) instruct and authorize the Board of Environmental Protection to adopt statewide criteria for toxic substances that are consistent with EPA recommendations or to adopt site-specific criteria or alternative statewide criteria that are based on sound scientific rationale and protective of the most sensitive designated uses. EPA approves these provisions (except for the clause related to naturally occurring toxic substances in § 420(2.A), which EPA is separately partially approving and partially disapproving, as discussed on pages 7 and 27-28, respectively) because they are consistent with the requirements in 40 C.F.R. § 131.11 for state adoption of water quality criteria.

Prohibitions and Exceptions to Prohibitions on Discharges to Class AA and Class SA Waters [38 M.R.S. § 465(1.C); 38 M.R.S. § 465(1.C.(2)); 38 M.R.S. § 465(1.C.(3)); 38 M.R.S. § 465(1.C.(4)); 38 M.R.S. § 465(1.C.(5)); 38 M.R.S. § 465-B(1.C.(2)); 38 M.R.S. § 465-B(1.C); 38 M.R.S. § 465-B(1.C.(3)); and 38 M.R.S. § 465-B(1.C.(4))]

In EPA's February 2, 2015 decision letter related to Maine WQS revisions submitted to EPA between 2004 and 2014, EPA identified, among others, the following statutory revisions that EPA concluded were not WQS and therefore EPA did not act on them in that decision letter: 38 M.R.S. § 465(1.C.(2)); 38 M.R.S. § 465(1.C.(3)); 38 M.R.S. § 465(1.C.(4)); 38 M.R.S. § 465(1.C.(5)); 38 M.R.S. § 465-B(1.C.(2)); and 38 M.R.S. § 465-B(1.C.(4)). EPA now recognizes that this characterization was in error. All of these revisions allow exceptions from the general prohibitions on direct discharges to Class AA and SA waters in 38 M.R.S. § 465(1.C) and § 465-B(1.C), respectively. Class AA and SA waters are specifically identified as outstanding national resource waters ("ONRWs") in 38 MRS § 464(4.F.(2)) and are therefore afforded the highest (Tier 3) protection under federal and state antidegradation policies. The

exceptions to the prohibitions on discharges that would otherwise apply to these ONRWs are integrally related to the extent of Tier 3 antidegradation protection afforded to these waters. Consequently, EPA has concluded that they are WQS revisions. EPA today approves these provisions, along with the pre-2003 general prohibitions in 38 M.R.S. § 465(1.C) and § 465-B(1.C) and an additional revision at 38 M.R.S. § 465-B(1.C.(3)), having determined that they are consistent with the federal antidegradation requirement at 40 C.F.R. § 131.12(a)(3) for the reasons discussed below.[38] It is important to note that any discharges authorized under these provisions must also meet all other applicable water quality standards.

EPA's antidegradation policy requires the quality of ONRWs to be "maintained and protected." 40 C.F.R. § 131.12(a)(3). EPA interprets this requirement to mean that there shall be no new or increased discharges to ONRWs or their tributaries that would lower water quality, with some exception for limited activities that result in temporary and short-term changes in water quality (Water Quality Standards Handbook: Second Edition, EPA-823-B-94-005a, August 1994, at section 4.7).

EPA approves the general prohibitions on direct discharges to Class AA and SA waters in 38 M.R.S. § 465(1.C) and § 465-B(1.C), respectively, because they clearly afford protection of ONRWs consistent with the antidegradation policy.

EPA approves the revision at 38 M.R.S. § 465(1.C.(2)), which allows discharges approved by DEP to aid in wild Atlantic salmon restoration, for the same reasons stated in EPA's January 25, 2005 approval of the revisions for state waters outside Indian lands. Specifically, the discharge provision is not an authorization to lower water quality. Rather, the discharges must be for the express purpose of assisting in the restoration of endangered Atlantic salmon by restoring water quality that has been degraded by anthropogenic activity. This is consistent with 40 C.F.R. § 131.12(a)(3). Further, the intent to restore natural ambient water chemistry to aid in the restoration of endangered salmon is consistent with the overall objective of the CWA at 101(a).

EPA approves the revision at 38 M.R.S. § 465(1.C.(3)), which allows aquatic pesticide or chemical discharges approved by DEP for invasive species control. EPA finds that since such discharges are, by their nature, short-term and temporary, and are for the express purpose of restoring biological communities affected by invasive species, the provision will not result in a lowering of water quality of ONRWs and therefore is consistent with 40 C.F.R. § 131.12(a)(3).

EPA approves the revisions at 38 M.R.S. § 465(1.C.(4)) and 38 M.R.S. § 465-B(1.C.(2)), which allow licensed discharges of aquatic pesticides approved by DEP for the control of mosquito-borne diseases, for the same reasons stated in EPA's August 19, 2009 approval of the revisions for state waters outside Indian lands. EPA finds that since the discharges of aquatic pesticides for mosquito control are, by their nature, short-term and temporary, and will use methods and materials that are protective of non-target species, the provisions will not result in a lowering of water quality and are consistent with 40 C.F.R. § 131.12(a)(3).

[38] EPA addresses two additional WQS revisions at 38 M.R.S. § 465(1.C.(1)) and 38 M.R.S. § 465-B(1.C.(1), which allow stormwater discharges to Class AA and SA waters, respectively, in the disapproval section below.

EPA approves the revision at 38 M.R.S. § 465-B(1.C.(3)), which allows overboard discharges licensed prior to January 1, 1986. Because this provision relates to discharges that existed before 1986, it does not authorize new or increased discharges to Class SA waters and therefore will not result in a future lowering of water quality and is consistent with 40 C.F.R. § 131.12(a)(3).

EPA approves the revisions at 38 M.R.S. § 465(1.C.(5)) and 38 M.R.S. § 465-B(1.C.(4)), which allow the discharge of pesticides approved by DEP that are unintended and the incidental result of spraying of pesticides as long as they are applied consistent with federal labeling restrictions and in compliance with state pesticide rules and best management practices. Because such discharges would be short term and temporary, and in compliance with federal and state pesticide requirements, EPA concludes that these provisions will not result in a lowering of water quality and are thus consistent with 40 C.F.R. § 131.12(a)(3).

Supporting Discussion of Disapprovals

Waiver or Modification of Protection and Improvement Laws [38 M.R.S. § 363-D]

Under 38 M.R.S. § 363-D, the DEP Commissioner or her designee may waive or modify any provision of Chapter 3 (Protection and Improvement of Waters), which includes water quality standards, to assist in any oil spill response activity conducted in accordance with the national or state contingency plans, or as otherwise directed by the federal on-scene coordinator or the Commissioner or her designee.

Waivers or modifications of WQS that would have the effect of removing a designated use or creating a subcategory of use, including waiving or modifying criteria necessary to support the use, may occur under the Clean Water Act but only in accordance with 40 C.F.R. § 131.10(g) (which, among other things, requires a use attainability analysis). Before taking such action, states must provide public notice and an opportunity for a public hearing, and revised WQS are subject to EPA review and approval. Because 38 M.R.S. § 363-D does not contain any of these requirements, it is not consistent with minimum federal requirements. Therefore EPA is disapproving 38 M.R.S. § 363-D as it relates to water quality standards.[39] EPA has no record of ever having previously acted to approve or disapprove this statute for any waters in Maine, so this disapproval applies to all waters in the State. Because 38 M.R.S. § 363-D was submitted to EPA before May 30, 2000, it will remain applicable for Clean Water Act purposes in state waters outside Indian lands until either EPA approves a revision promulgated by Maine or EPA promulgates a revision. See 40 C.F.R. § 131.21(c).

Maine may remedy this disapproval either by specifying in the statute that it does not apply to water quality standards, or by including requirements that must be satisfied before any waiver

[39] EPA regulations, at 40 C.F.R. § 122.3(d), provide a limited exception from the need to get an NPDES permit and, indirectly, to comply with water quality standards, for "any discharge in compliance with the instructions of an On-Scene Coordinator pursuant to 40 CFR part 300 (The National Oil and Hazardous Substances Pollution Contingency Plan) or 33 CFR 153.10(e) (Pollution by Oil and Hazardous Substances)." Maine has a similar permitting exemption at 38 M.R.S. § 413(2-G.B). By contrast, 38 M.R.S. § 363-D does not limit the waiver to discharges conducted in compliance with the instructions of the federal On-Scene Coordinator, nor is it limited to discharges associated with removal efforts at the scene of the oil spill, which is the purpose of EPA's regulation.

or modification of WQS takes effect under the statute, including public participation, use attainability analysis, and EPA review and approval.

Dissolved Oxygen ("DO") Aquatic Life Criteria for Class A Fresh Waters [38 M.R.S. § 465(2.B)]

EPA's review of the DO criterion for aquatic life in 38 M.R.S. § 465(2.B) for Class A fresh waters is based on whether the criterion is protective of aquatic life uses, including all life stages of indigenous species. The criterion requires a minimum of 7 mg/l DO year round. EPA's Gold Book recommends criteria for DO that are protective of coldwater and warmwater species at all life stages. These include freshwater DO criteria of at least 9.5 mg/l as a 7-day mean and at least 8 mg/l as a 1-day minimum to protect early life stages of coldwater species, including salmonids, and 3 to 6.5 mg/l for adult coldwater species and all life stages of warm water species. Maine's DO criterion for Class A freshwaters is protective of all life stages of warmwater species and adult coldwater species, but is not high enough to protect the early life stages of coldwater species.

In 1986, EPA declined to approve Maine's Class A criterion and requested that Maine adopt criteria for Class A waters that are protective of salmonid spawning, as had been done in Class B waters.[40] EPA reminded DEP of this request again in 1988.[41] So far, Maine has not remedied this deficiency in the DO criteria for Class A fresh waters.

Because the DO criterion for aquatic life in 38 M.R.S. § 465(2.B) does not protect early life stages of coldwater species and, therefore, the full aquatic life designated use, EPA is disapproving the criterion. This disapproval applies in all waters of Maine, including waters in Indian lands, because EPA never previously acted on the criterion for state waters. Because 38 M.R.S. § 465(2.B) was submitted to EPA before May 30, 2000, it will remain applicable for Clean Water Act purposes in state waters outside Indian lands until either EPA approves a revision promulgated by Maine or EPA promulgates a revision. See 40 C.F.R. § 131.21(c). Maine may remedy this disapproval by adopting DO criteria for Class A fresh waters that are protective of all life stages of indigenous aquatic life.

Mixing Zones [38 M.R.S. § 451]

Maine's mixing zone policy, which is set forth in 38 M.R.S. § 451, allows the Commissioner to establish mixing zones that would allow the "reasonable" opportunity for dilution or mixture of pollutants before the receiving waters would be evaluated for WQS compliance.

States have the discretion to adopt mixing zone policies into their WQS, subject to EPA review and approval. 40 C.F.R. § 131.13. EPA's mixing zone guidance explains that a mixing zone is a limited area or volume of water where initial dilution of a discharge takes place, and where certain numeric criteria may be exceeded, so long as the designated uses of the waterbody as a whole are protected.[42] While mixing zones serve to dilute concentrations of pollutants in effluent discharges, they also allow increases in the mass loading of the pollutant to the

[40] July 16, 1986, Letter from Michael R. Deland, EPA to Kenneth C. Young, DEP, page 3.
[41] November 3, 1988, Letter from David A. Fierra, EPA to Stephen W. Groves, DEP, page 4.
[42] EPA, *Water Quality Standards Handbook – Section 5: General Policies*, Section 5.1, 2015 online version.

waterbody (more so than would occur if no mixing zone were allowed). Therefore, if not applied appropriately, a mixing zone could adversely affect mobile species passing through the mixing zone as well as less mobile species (e.g., benthic communities) in the immediate vicinity of the discharge. Because of these and other factors, mixing zones should be applied carefully so that they do not result in impairment of the designated use of the waterbody as a whole or impede progress toward the CWA goals of restoring and maintaining the physical, chemical, and biological integrity of the Nation's waters. [43]

EPA's guidance includes specific recommendations that a state's mixing zone policy should include to ensure the protection of uses. Among other things, mixing zone policies should ensure that mixing zones do not impair the designated uses of the water body as a whole; that pollutant concentrations in the mixing zone are not lethal to organisms passing through and do not cause significant human health risks; and that mixing zones do not endanger critical areas such as breeding or spawning grounds, drinking water intakes and sources, shellfish beds, or endangered or threatened species habitat.[44,45] Maine's mixing zone law does not contain any of these or other scientifically sound safeguards to ensure the protection of designated uses. The only specific statutory limitation on mixing zones in Maine's mixing zone policy is that they be "reasonable."

In 1985, EPA requested DEP to develop a mixing zone policy consistent with EPA's guidance.[46] DEP's response did not include agreement to develop a written policy or rule, saying instead that "Decisions regarding mixing zones considers *[sic]* the factors in E.P.A.'s 'Water Quality Standards Handbook,' Chapter 2."[47] On October 29, 1998, DEP acknowledged that EPA had, several years previously, asked Maine to develop a mixing zone rule.[48] To EPA's knowledge, no rule was ever promulgated or submitted to EPA.[49]

EPA is disapproving 38 M.R.S § 451 for waters in Indian lands because it does not ensure that mixing zones will protect designated uses. Maine may remedy this disapproval by revising the statute or promulgating a regulation which contains explicit conditions on the scope and extent of mixing zones adequate to protect designated uses. EPA recommends that any revision extend to all waters in Maine, not just waters in Indian lands.

pH Criterion for Fresh Waters [38 M.R.S. § 464(4.A(5))]

EPA's review of Maine's pH criterion in 38 M.R.S. § 464(4.A(5)) for fresh waters is based on whether the criterion is protective of aquatic life uses. The criterion prohibits discharges from

---

[43] Id.
[44] Id., Section 5.1.1
[45] EPA, *Technical Support Document For Water Quality-based Toxics Control,* EPA/505/2-90-001, March 1991, pages 70-71.
[46] Letters dated February 20, 1985 from Michael Deland, EPA to Henry Warren, Maine DEP; and March 7, 1985 from David Fierra, EPA to Stephen Groves, DEP.
[47] April 1, 1985, Letter from Stephen W. Groves, DEP to Michael R. Deland, EPA, Attachment page 2.
[48] October 29, 1998, Email from Barry Mower, DEP to William Beckwith, EPA
[49] EPA is today approving for tribal waters the zone of passage provision in DEP Rule Chapter 581(5). While related to the establishment of a mixing zone, it does not itself constitute a mixing zone policy or provide the necessary protection of designated uses.

causing pH to fall outside of the 6.0 to 8.5 range. EPA's recommended criterion for pH in fresh waters, which has been unchanged since 1976, specifies that pH be in the range from 6.5 to 9.0 to protect freshwater aquatic life.[50, 51]

In September of 1976, EPA recommended that Maine adopt pH criteria consistent with EPA's 1976 *Water Quality Criteria*.[52] At the time, Maine's freshwater pH criterion, which had been part of Maine's WQS since at least 1972, was already 6.0 to 8.5 for fresh waters.[53] States may adopt, and EPA may approve, statewide or site specific criteria that are less stringent than EPA's recommendations if there is a scientific basis that shows that a less stringent criteria is protective of designated the designated uses. However, EPA is not aware of correspondence or other documentation in our records indicating that such a scientific basis has ever been provided to justify Maine's pH criterion for fresh waters.

EPA disapproves Maine's pH criteria in 38 M.R.S. § 464(4.A(5)) for fresh waters in Indian lands because the low end of the pH range (6.0) is below EPA's recommended criterion of 6.5 for the low end of the pH range, and it is not protective of aquatic life uses. Maine may remedy this disapproval by adopting criteria that are consistent with EPA's recommendations or by demonstrating, based on sound scientific rationale, why pH in the range of 6.0 to 6.5 is protective of freshwater aquatic life uses. EPA recommends that any revision extend to all waters in Maine, not just waters in Indian lands.

Natural Conditions Clauses as They Apply to Human Health Criteria [38 M.R.S § 464(4.C) and 38 M.R.S. § 420(2.A)]

EPA's review of Maine's natural conditions clauses at 38 M.R.S § 464(4.C) and § 420(2.A) as they apply to human health criteria is based on whether the clauses protect designated human uses. The clause in 38 M.R.S § 464(4.C) says that, "Where natural conditions, including but not limited to, marshes bogs and abnormal concentrations of wildlife cause the dissolved oxygen criteria or other water quality criteria to fall below the minimum standards…those waters shall not be considered to be failing to attain their classification because of those natural conditions." The clause in 38 M.R.S. § 420(2.A) says, "Except as naturally occurs or as provided in paragraphs B and C, the board shall regulate toxic substances in the surface waters of the State at the levels set forth in federal water quality criteria as established by the United States Environmental Protection Agency pursuant to the Federal Water Pollution Control Act…."

These provisions are not consistent with EPA's interpretation of the relationship between natural conditions and the protection of designated human health uses, which is articulated in EPA's November 1997 guidance entitled *Establishing Site Specific Aquatic Life Criteria Equal to Natural Background.*[54] As discussed above in EPA's approval of these natural conditions clauses as they relate to aquatic life, EPA recognizes that there may be naturally occurring concentrations of pollutants which exceed the national criteria published under section 304(a)

---

[50] EPA, *Quality Criteria for Water*, July 1976, page 178.
[51] EPA, *Quality Criteria for Water 1986*, EPA 440/5-86-001, pH, May 1, 1986.
[52] September 23, 1976, Letter from Kenneth L. Johnson, EPA, to William R. Adams, Jr., DEP
[53] EPA and DEP, *Water Quality Standards Summary,* 1972, pages I-4 to I-5.
[54] Davies, Tudor, EPA. *Establishing Site Specific Aquatic Life Criteria Equal to Natural Background*, November 5, 1997.

of the CWA that are still protective of aquatic life. However, in contrast with aquatic life uses, a natural level of a naturally occurring pollutant does not necessarily protect designated human uses. Naturally occurring levels of a pollutant are assumed to protect aquatic life species that have naturally developed in the affected waters. However, human health does not adapt to higher ambient pollutant levels, even if they are naturally caused. Consequently, the same assumptions of protectiveness cannot be made with regard to designated uses that affect human health (e.g., people eating fish or shellfish from Maine waters, and recreating in Maine waters). For this reason, EPA's 1997 guidance also states that where the natural background concentration exceeds the state-adopted human health criterion, at a minimum, states should re-evaluate the human health use designation.[55]

Therefore, EPA disapproves the natural conditions clauses at 38 M.R.S §464(4.C) and § 420(2.A) for waters in Indian lands as they apply to criteria that protect human health because the application of these provisions fails to protect designated human health uses as required by the CWA and federal water quality standards regulations at 40 C.F.R. § 131.11(a). Maine may remedy this disapproval by clarifying in statute, or, if appropriate, in a rule, that these provisions do not apply to human health criteria. EPA recommends that any revisions extend to all waters in Maine, not just waters in Indian lands. If there are naturally occurring pollutants which exceed Maine's criteria to protect human health, Maine may revise its WQS on a site-specific basis to remove or modify a use, in accordance with the procedures of 40 C.F.R. § 131.10(g) and 38 M.R.S. § 464(2-A).

EPA is aware of the error made in our approvals of similar provisions in DEP Rule Chapter 584(2) and (3), which allow for naturally occurring pollutants which impart toxicity. These provisions were approved by EPA in state waters in 2007[56] and in waters in Indian lands in 2015.[57] We recommend that at the same time that Maine revises the natural conditions clauses in 38 M.R.S §464(4.C) and § 420(2.A) to pertain only to aquatic life uses, Maine also remedy the corresponding clauses currently in DEP Rule Chapter 584 for toxic substances.

Narrative Bacteria Criteria for Class AA, A, and SA Waters [38 M.R.S. § 465 (1.B and 2.B) and 38 M.R.S. § 465-B(1.B)]

EPA's review of Maine's narrative bacteria criteria for Class AA, A, and SA waters in 38 M.R.S. § 465(1.B and 2.B) and 38 M.R.S. § 465-B(1.B) is based on whether the criteria are protective of recreational uses and, in SA waters, also shellfishing uses. The criteria specify that bacteria content of these waters shall be "as naturally occurs."

EPA recognizes that the intent of these criteria, similar to DO and aquatic life criteria for these waters, is to reflect conditions unaffected by human activity. However, in the case of bacteria, human pathogens can result from naturally occurring sources such as wild animals. Therefore there is potential human health risk from recreational and shellfishing exposure to bacteria in naturally occurring, wild animal-impacted waters (2012 Recreational Water Quality Criteria, see section 3.5.1-2). This concern underlies EPA's disapproval on March 16, 2015 of Maine's recreational bacteria criteria as applied to waters in Indian lands, because the criteria did not

[55] Id, page 3.
[56] July 7, 2007, Letter from Linda M. Murphy, EPA to David P. Littell, DEP, page 1.
[57] February 2, 2015, Letter from H. Curtis Spalding, EPA to Patricia W. Aho, DEP, page 3.

address bacteria from wild animal sources. Similarly, EPA disapproves the narrative criteria, "as naturally occurs" for bacteria in Class AA, A and SA waters in Indian lands, because they do not adequately protect recreation in and on the waters in Class AA, A, and SA waters, and propagation and harvesting of shellfish in Class SA waters.

To address this disapproval, EPA recommends that Maine adopt bacteria criteria for Class A, AA and SA waters in Indian lands to support recreational and shellfishing uses, including EPA's 2012 recommendations for recreational criteria[58] and EPA's 1986 Gold Book recommendations for shellfishing[59] or the NSSP's most recent recommendations for shellfish harvesting without depuration.[60] EPA also recommends that any revision extend to all waters in Maine, not just waters in Indian lands.

Exceptions to Prohibitions on Discharges to Class AA and Class SA Waters [38 M.R.S. § 465(1.C.(1)) and 38 M.R.S. § 465-B(1.C.(1))]

EPA's review of 38 M.R.S. § 465(1.C.(1)) and 38 M.R.S. § 465-B(1.C.(1)), which allow an exception from the general prohibitions on direct discharges to Class AA and SA waters, respectively, for stormwater discharges that comply with state and local requirements, is based on whether they are consistent with the federal antidegradation requirement at 40 C.F.R. § 131.12(a)(3).

Class AA and SA waters are specifically identified as outstanding national resource waters ("ONRWs") in 38 MRS § 464(4.F.(2)) and are therefore afforded the highest (Tier 3) protection under the antidegradation policy. The quality of such waters must be "maintained and protected," which EPA interprets to mean no new or increased discharges to ONRWs or their tributaries that would lower water quality, with some exception for limited activities that result in temporary and short-term changes in water quality (Water Quality Standards Handbook: Second Edition, EPA-823-B-94-005a, August 1994). Stormwater discharges may be short-term, but they are not temporary in most cases, and we have not found provisions in other state laws that would ensure that any such stormwater discharges are controlled or treated such that the Class AA and SA water quality will be maintained and protected. Therefore, these provisions are not consistent with Tier 3 antidegradation requirements.

EPA is disapproving 38 M.R.S. § 465(1.C.(1)) and § 465-B(1.C.(1)) as they apply to all Class AA and SA waters in Maine, because EPA never acted on these provisions for any waters previously. These provisions were submitted to EPA before May 30, 2000 and therefore will remain in effect in state waters outside Indian lands until either EPA approves a revision promulgated by Maine or EPA promulgates a revision. See 40 C.F.R. § 131.21(c). Maine may remedy the disapprovals by removing or narrowing these exceptions to the prohibitions on direct discharges to ONRWs.

[58] EPA, *Recreational Water Quality Criteria,* Office of Water 820-F-12-058, 2012.
[59] EPA, *Quality Criteria for Water 1986*, EPA 440/5-86-001, Dissolved Oxygen, May 1, 1986.
[60] NSSP, *Guide for the Control of Molluscan Shellfish 2013 Revision*, 2013.

Tidal[61] Waters Temperature Criteria [DEP Rule Chapter 582(5)]

EPA's review of the temperature criteria for tidal waters in DEP Rule Chapter 582(5), is based on whether the criteria protect estuarine and marine life uses for waters in Indian lands. Chapter 582(5) provides limits on the allowable rise in ambient temperature from individual discharges and provides a maximum allowable temperature from cumulative discharges. The allowable rise from individual dischargers is 4° F from September 2nd to May 30th and 1.5° F from June 1st to September 1st, as measured outside of any mixing zone. The maximum temperature allowed is 85° F, also as measured outside of any mixing zone.

EPA approved the temperature criteria for tidal waters in state waters in 1973[62], which were based, in part, on the U.S. Department of Interior's ("DOI") 1968 "Green Book" recommendations for temperature differentials in marine waters.[63] DOI's 1968 recommendations were replaced in 1976 by EPA's "Red Book" recommendations[64] and again, most recently, in 1986 by EPA's Gold Book recommendations. While DEP updated its freshwater temperature criteria in 1989 and, among other things, added reference to EPA's recommended criteria to protect indigenous species, DEP has not updated its tidal temperature criteria since 1973. They make no reference to EPA's recommended criteria or to the development of equally protective site specific criteria.

The Gold Book recommendations include 1) a maximum acceptable increase in the weekly average temperature resulting from artificial sources of 1° C (1.8° F) during all seasons of the year, providing the summer maxima are not exceeded; 2) daily temperature cycles characteristic of the water body segment should not be altered in either amplitude or frequency; and 3) summer thermal maxima, which define the upper thermal limits for the communities of the discharge area, should be established on a site-specific basis. Baseline thermal conditions should be measured at a site where there is no unnatural thermal addition from any source, which is in reasonable proximity to the thermal discharge (within 5 miles) and which has a similar hydrography to that of the receiving waters at the discharge. [65]

The Gold Book also explains the importance of maintaining ambient water temperatures close to the baseline:

> …life associated with the aquatic environment in any location has its species composition and activity regulated by water temperature. Since essentially all of these organisms are so-called "cold blooded" or poikilotherms, the temperature of the water regulates their metabolism and ability to survive and reproduce effectively.[66]

---

[61] Although no definition of "tidal waters" is currently included in Maine's WQS, EPA assumes that the term "tidal waters" means "estuarine and marine waters," as defined in 38 M.R.S. § 361-A(5), since that definition was previously used to define "tidal waters." See L.D.1503, "An Act to Amend the Classification System for Maine Waters and Change the Classifications of Certain Waters," 112th Maine legislature, 1986.

[62] December 17, 1973, letter from John A.S. McGlennon, EPA to Kenneth M. Curtis, Governor of Maine.

[63] U.S. Department of the Interior, *Report of the Committee on Water Quality Criteria* ("Green Book"), April 1, 1968, page 69.

[64] EPA, *Quality Criteria for Water* ("Red Book"), July 1976, page 218.

[65] EPA, *Quality Criteria for Water 1986*, EPA 440/5-86-001, May 1, 1986, pages 2-3 of Temperature section.

[66] EPA, *Quality Criteria for Water 1986*, EPA 440/5-86-001, Temperature, May 1, 1986.

Maine's provision that allows a 4° F monthly average temperature rise above maximum ambient temperatures is inconsistent with EPA's recommendation.

Based on NOAA data, the average temperatures in Maine coastal waters in the vicinity of Eastport, which is the closest monitoring location to the Passamaquoddy Reservation at Pleasant Point, range from 37° F in February to 52° F in September.[67]

Maine's designated uses and narrative criteria for estuarine and marine waters in 38 M.R.S. § 465-B require, for SA waters, that habitat be "natural," and that estuarine and marine life be as naturally occurs; for SB waters, that habitat be characterized as unimpaired, and that the water quality be of sufficient quality to support all indigenous species without detrimental changes to the biological community; and for SC waters, that the water quality be of sufficient quality to support all indigenous species of fish and maintain the structure and function of the resident biological community. Maine's maximum temperature criterion of 85° F in estuarine and marine waters could not, by any measure, be considered protective of species which have been associated with waters in the 37° F to 52° F range, including indigenous species such as the anadromous Atlantic salmon, blueback herring, alewife, and American shad present in the vicinity of the St. Croix River. Ambient summertime water temperatures of 85° F are more typical of Atlantic coastal waters of the southern United States.[68]

EPA is disapproving the tidal water temperature criteria for waters in Indian lands because they do not protect the designated uses as required by the CWA and by 40 C.F.R. § 131.11(a). Maine may remedy EPA's disapproval by adopting temperature criteria that are consistent with EPA's current recommendations or by providing alternative site specific criteria that are based on sound scientific rationale and are sufficient to protect the designated uses. Although the disapproval does not apply to tidal waters temperature criteria for Maine waters outside waters in Indian lands, EPA recommends that Maine adopt new tidal waters temperature criteria statewide, in accordance with the requirements of 40 C.F.R. § 131.6(c) and 40 C.F.R § 131.20(a).

New or Revised Provisions That are Not WQS and do Not Require an EPA Decision

As noted above, EPA reviewed Maine's statutes and rules in the State's docket and EPA's repository and identified provisions that, while important elements of state law, are not WQS requiring EPA review and approval or disapproval pursuant to Section 303(c)(2) of the Clean Water Act and 40 C.F.R. part 131. As discussed in more detail in EPA's February 2, 2015 decision, EPA recently clarified how it determines what is or is not a new or revised WQS, as summarized in EPA's 2012 Frequently Asked Questions ("FAQ") publication on the subject. After careful review of Maine's statutes and rules in light of this clarification, EPA finds that the provisions listed below are not WQS requiring EPA review and approval or disapproval, because they do not establish, alter, or in any other way include or address designated uses, criteria, or antidegradation requirements.

---

[67]NOAA, Water Temperature Table of All Coastal Regions, https://www.nodc.noaa.gov/dsdt/cwtg/all_meanT.html

[68] Id.

- 38 M.R.S. §§ 361-A and 466 – Definitions contained in these sections that are not specifically listed and approved above;

- 38 M.R.S. § 410-H – Nonpoint Source Pollution Program Definitions;

- 38 M.R.S. § 410-I – Nonpoint Source Pollution Program Implementation;

- 38 M.R.S. § 413(1)-(10) and (11.A, 11.B, 11.C, 11.F, and 11.G) – Waste discharge licenses;

- 38 M.R.S. § 414-A(1.D), (1.E), (1-A), (1-B), (1-C), and (3)-(6) – Conditions of licenses;

- 38 M.R.S. § 414-B – Publically Owned Treatment Works;

- 38 M.R.S. § 414-C(1), (2), and (4)-(6) – Color Pollution Control;

- 38 M.R.S. § 417 – Certain Deposits and Discharges Prohibited;

- 38 M.R.S. § 418 -- Log Driving Storage;

- 38 M.R.S. § 418-A -- Protection of Lower Penobscot River;

- 38 M.R.S. § 419-A – Prohibition on the Use of Tributyltin as an Anti-fouling Agent;

- 38 M.R.S. § 420(1), (1-A), (2.I), and (3) – Certain Deposits and Discharges Prohibited;

- 38 M.R.S. § 423 – Discharge of Waste from Watercraft;

- 38 M.R.S. § 423-A – Discharge of Waste from Motor Vehicles;

- 38 M.R.S. § 451-A – Time Schedule Variances;

- 38 M.R.S. § 464(3.A), (3.C), and (3.D) (reports to the Legislature); (4.A.(1), (1.(a), 1.(b),[69] (2), and (6) – (11)) (general discharge provisions); (4.J) (use of assimilative capacity); (4.K) (effluent limits for metals); (5) (rulemaking); (6) (implementation of biological water quality criteria); (7) (interdepartmental coordination); (8) (development of group systems); and (12) (discharges from fish hatcheries);

- 38 M.R.S. § 465(2.C.(1) – (5))(exceptions to general requirements on discharges to Class A waters); (2.D) (stormwater discharges to Class A waters); (2.E) (deposit of material on banks of Class A waters); (3.C.(2)) (discharges of pesticides for mosquito borne diseases to Class B waters); and in (4.B.(2)), the second to last paragraph (regarding agreements with licensees and water quality certificate holders.)

[69] EPA previously concluded in its February 2, 2015 decision that § 464(4)(A.(1)(c)-(f)) are not WQS.

- 38 M.R.S. § 465-A(1.C) -- Exceptions to prohibitions on discharges to Class GPA waters);

- 38 M.R.S. § 465-B(2.C, second sentence) – Prohibition on certain new discharges to Class SB waters;

- DEP Rule Chapter 450/Chapter 11 -- Administrative Regulations for Hydropower Projects;

- DEP Rule Chapter 514 -- Regulations Concerning the Use of Aquatic Pesticides;

- DEP Rule Chapter 519 -- Interim Effluent Limitations and Controls for the Discharge of Mercury;

- DEP Rule Chapter 530 – Surface Waters Toxics Control Program, except section 4.B (stream design flows), which EPA approved for tribal waters on February 2, 2015;

- DEP Rule Chapter 550 -- Discontinuance of Wastewater Treatment Lagoons;

- DEP Rule Chapter 570 -- Stormwater and Combined Sewer Overflows; and

- DEP Rule Chapter 586 – Rules Pertaining to Discharges to Class A Waters.

EPA has previously approved some of the above-listed provisions for state waters, assuming that they were WQS, or without calling out embedded non-WQS language in a longer narrative. However, under CWA §303(c), EPA only has the authority and duty to approve or disapprove new or revised state WQS. Therefore, EPA's prior "approvals" related to these provisions have no legal effect. EPA is hereby clarifying that in spite of letters that might indicate otherwise, the Agency has not taken action pursuant to CWA §303(c) on any of these provisions because it had no authority to do so.[70]

EPA looks forward to continued cooperation with Maine in the development, review, and approval of water quality standards pursuant to our responsibilities under the Clean Water Act. As stated in the February 2, 2015 letter, EPA would like to begin discussions with DEP as soon

[70] There are several statutes and regulations listed in EPA's repository that Maine DEP did not include with its formal submission to EPA in 2000 of all of its WQS. On the repository, they are accompanied by an asterisk (*) indicating that they are not part of the official Maine CWA-WQS docket and not subject to review under the Clean Water Act. They include 38 M.R.S. § 419-B (Goals for dates of removal of transformers containing polychlorinated biphenyls); 38 M.R.S. § 465-C (Standards of Classification of Groundwater); 38 M.R.S. § 470 (Classification of Groundwater); 38 M.R.S. § 470-H (In-stream Flow and Water Level Requirements); and DEP Rule Chapter 587 (In-stream Flow and Water Level Requirements). EPA agrees that 38 M.R.S. §§ 419-B, 465-C, 470, and 470-H are not WQS subject to CWA review. EPA would like to better understand Maine's rationale for asserting that Rule Chapter 587 does not contain WQS before concluding that no part of the Rule is subject to CWA review.

as possible about the criteria that EPA has disapproved. EPA will again attempt to work with DEP to schedule such discussions. In the meantime, please contact Ellen Weitzler (at weitzler.ellen@epa.gov or 617-918-1582) if you have any questions.

Sincerely,

H. Curtis Spalding
Regional Administrator